CLAIMS:

1. An improved illumination device including an optical fiber for directing light from a light source located adjacent a first end of the optical fiber to a second end of the optical fiber, the improvement comprising:

a light diffuser disposed at said second end of the optical fiber, said light diffuser including a plurality of cracks formed in said optical fiber.

2. An improved optical fiber having first and second ends, comprising an inner core of optical material having a first index of refraction and an outer layer of cladding having a second index of refraction radially surrounding said inner core, wherein said improvement comprises a light diffuser incorporated into a least one end of said optical fiber.

3. The improved optical fiber of Claim 2 wherein said light diffuser comprises a plurality of cracks disposed in said at least one end of said optical fiber.

4. The improved optical fiber of Claim 3 wherein said plurality of cracks are longitudinally disposed in said at least one end of said optical fiber.

5. The improved optical fiber of Claim 3 wherein said plurality of cracks are of substantially uniform length, said length ranging between one half and twice the outer diameter of said optical fiber.

6. The improved optical fiber of Claim 3 wherein said inner core of optical material is composed of an acrylic plastic.

7. A method for forming a wide angle light diffuser into an end of an optical fiber having a core and a cladding, comprising the steps of:

applying a tension force to said optical fiber adjacent at said end, said tension force increasing stress in said optical fiber core; and

forming a plurality of substantially longitudinal cracks in said stressed optical fiber core to reduce stress in said optical fiber core while maintaining said tension force on said optical fiber, said plurality of substantially longitudinal cracks diffusing light exiting said optical fiber at said end.

8. The method of Claim 7 for forming a wide angle light diffuser into an end of an optical fiber further including the steps of:

heating said optical fiber to a softening point prior to applying said tension force; and

cooling said optical fiber prior to forming said plurality of substantially longitudinal cracks in said stressed optical fiber core.

9. The method of Claim 7 for forming a wide angle light diffuser into an end of an optical fiber wherein the step of forming said plurality of substantially longitudinal cracks includes the application of a compressive force to said stressed optical fiber at said end.

10. The method of Claim 7 for forming a wide angle light diffuser into an end of an optical fiber wherein the step of applying a tension force to said optical fiber results in a reduction in an outer diameter of said optical fiber at said end.

11 The method of Claim 7 for forming a wide angle light diffuser into an end of an optical fiber wherein said optical fiber core is composed of acrylic.

12. The method of Claim 7 for forming a wide angle light diffuser into an end of an optical fiber wherein the step of forming said plurality of substantially longitudinal cracks includes exposing said stressed optical fiber end to an organic solvent.

13. The method of Claim 12 for forming a wide angle light diffuser into an end of an optical fiber wherein said organic solvent is alcohol.